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(54) **MICROELECTROMECHANICAL RATCHETING APPARATUS**

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(58) **Field of Search** ..... 310/306, 307, 310/308, 309, 40 MM, 80; 60/527, 528, 529; 74/44, 126, 128, 129, 130

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(57) **ABSTRACT**

A microelectromechanical (MEM) ratcheting apparatus is disclosed which includes an electrostatic or thermal actuator that drives a moveable member in the form of a ring gear, stage, or rack. Motion is effected by one or more reciprocating pawls driven by the actuator in a direction that is parallel to, in line with, or tangential to the path. The reciprocating pawls engage indexing elements (e.g. teeth or pins) on the moveable member to incrementally move the member along a curved or straight path with the ability to precisely control and determine the position of the moveable member. The MEM apparatus can be formed on a silicon substrate by conventional surface micromachining methods.

4 Claims, 9 Drawing Sheets